Incorporating Evidence into Clinical Teaching: Enhanced Geriatrics Specialty Case-Based Residency Presentations

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Abstract

Introduction Case-based presentations are widely used in medical education and are a preferred education modality to teach about the care of geriatric patients across a range of medical specialties.

Methods We incorporated evidence-based materials from topical literature syntheses into case-based presentations on the care of geriatric patients for use by specialty residents. These enhanced case-based presentations were used to augment learning and to facilitate detection of additional educational needs for future resident training sessions.

Results Forty case-based presentations were presented to 11 specialty programs during a 4-year period. The program was popular, and program directors and residents requested additional presentations. Geriatric evidence-based summaries were viewed online 375 times during the course of the project. Geriatric clinical consults increased from an average of 10 consults a year to 141 from 64 different providers during the first year.

Discussion Case-based presentation, enhanced with evidence-based summaries of research literature generated by information specialists, is a feasible and effective approach to teaching clinical content. These presentations can be used to target geriatrics educational competencies for resident trainees in nongeriatric specialties.

Editor's note: The online version of this article contains a sample literature summary and an example case presentation.

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Introduction

Case-based presentations have a long tradition in medical training, linking trainees' developing knowledge to clinical practice in an interactive environment.[1–4] The literature is sparse in describing use of evidence-based techniques to enhance case presentations.

The Vanderbilt University Knowledge Management/Eskind Biomedical Library developed a Clinical Informatics Consult Service in 1996 to provide literature searches for clinicians.[5] All information specialists undergo Masters level training in literature searching and critical appraisal and demonstrate proficiency in their understanding of medical terminology, research design, and biostatistics. In 2004, the program was expanded to include ambulatory settings through an Outpatient Clinical Informatics Consult Service.[6] The service included an electronic communication tool that allowed physicians to request a literature search for complex questions arising during patient encounters, including capturing the answers to clinical questions at the point of care.[7,8]

BOX **Specialty Residency Geriatrics Educational Needs**

Geriatric syndrome management
Comorbidity
Frailty
Postoperative delirium
Systems-based practice
Practice-based learning and improvement

We describe an innovative approach to case-based learning that uses a messaging tool within the electronic medical record system, coupled with the expertise of information specialists, to enhance case-based presentations delivered by geriatricians to nongeriatric specialty residents.

What was known
Case-based presentations have been used traditionally to apply developing medical knowledge. There are few descriptions of the use of evidence-based medicine to enhance case presentations.

What is new
Incorporation of evidence-based materials from topical literature syntheses into case-based presentations on geriatric care topics resulted in additional review of geriatric evidence-based summaries and increased geriatrics consults for 64 physicians from 10 to 141 consults per year.

Limitations
Small sample, single specialty and single site, use of surrogate markers and subjective feedback among the outcome measures.

Bottom line
Case-based presentations, enhanced with evidence-based literature, are a practical and feasible modality for teaching geriatric competencies to residents in nongeriatric specialties.

Methods

Setting

To effectively disseminate geriatric educational content to nongeriatric specialty residencies, we invited all adult specialty training program directors at our institution to meet individually with presenting geriatricians to assess geriatric learning needs as defined by the American Geriatric Society's *Assessing Care of Vulnerable Elders*[9] quality indicators.

Participants

Eleven specialty program directors from emergency medicine, general surgery, neurology, neurosurgery, obstetrics/gynecology, ophthalmology, oral surgery, orthopedics, psychiatry, thoracic surgery, and urology consented to participate in the needs assessment and training initiative in 2006. Program directors were interviewed individually about curricular needs and training models related to competencies for caring for geriatric patients; they overwhelmingly identified case-based presentations as an effective and preferred mechanism for training residents in nongeriatric specialties. The BOX lists the top educational competency needs expressed during individual interviews with the specialty program directors. In addition to the definitions in the *Assessing Care of Vulnerable Elders*, the case-based presentations we designed incorporated the Accreditation Council for Graduate Medical Education competencies[10] and the Association of American Medical Colleges medical student[11] and resident[12] geriatric competencies that mapped to the identified curricular needs.

Preparation of Geriatric Information Summaries

Through collaboration with the information specialists in the Outpatient Clinical Informatics Consult Service, we obtained tailored, evidence-based literature searches that informed our clinical decision making for the care of geriatric patients. They consisted of (1) a concise statement of the current state of the research literature, including all available viewpoints, conflicting study results, and limitations; (2) written or tabular summaries of the individual studies selected and reviewed for their quality, strength, or representation of the research evidence, with links to the full text articles when available; (3) information on the search strategies used to retrieve the relevant literature; and (4) additional readings that included practice guidelines or related research pertinent to the clinical question.[13–14] The Knowledge Management team also created a Geriatrics Library to provide access to a collection of online information resources for geriatric education, research, and patient care, including the geriatric-related literature summaries, and granted open access to the summaries for non-Vanderbilt users through a web portal sponsored in part by the Donald W Reynolds Foundation, called the *Portal of Geriatrics Online Education* or POGOe (http://www.pogoe.org).

The APPENDIX, provided as online supplemental material, shows a sample summary of a literature review and synthesis of all results developed in response to a clinical question submitted by the geriatrics consult service regarding the survival of dementia patients who receive primary nutrition via percutaneous endoscopic gastrostomy tube feeding. The final report sent to the clinicians is organized into 2 sections: (1) a summary of the current evidence on patient survival given percutaneous endoscopic gastrostomy tube feeding, and (2) a detailed table of study data filtered from each research study selected for the summary (provided online).

Case Selection

In preparing for the nongeriatric residency specialty training sessions, presenting geriatricians developed geriatric cases derived from actual patients (inpatient, outpatient, and emergency department) treated at the Vanderbilt Senior Care Service or the Tennessee Valley Healthcare

System Geriatric Evaluation and Management Unit. The content targeted the educational competency needs identified by nongeriatric residency specialty program directors and included concise case descriptions with clearly defined objectives, goals, and critical actions; a list of geriatrics education resources; and supplemental teaching handouts containing a summary of the corresponding synthesized literature.

Results

Case Presentation Development

The time required to develop each case-based presentation involved approximately 2 hours for geriatricians and 6 to 8 hours for the information specialist, depending on the complexity of the clinical question, the number of related questions posed, the information specialist's familiarity with the research base for the topic, and the quantity and quality of the relevant primary literature available.

Case Presentation Delivery

Case presentations were delivered during mandatory division teaching conferences. Geriatricians introduced the cases and conducted interactive small-group discussions about the cases with the specialty resident audiences. A typical case discussion lasted 30 minutes and consisted of 15 minutes for the case presentation and 15 minutes for small-group discussion. The presentation to the residents included clearly stated educational objectives, a critical actions list, and appended resources in addition to the evidence-based information packet concerning tube feeding in dementia patients.

Resident and program directors provided verbal feedback following the presentations to determine additional learning objectives and corresponding competencies for development of future cases and new evidence-based information packets. Baseline and subsequent geriatric consult requests and electronic access to geriatric information summaries were also tracked to measure the effect on specialty service awareness of the availability of geriatric expertise hospital wide.

Use

Forty enhanced case-based presentations were distributed to specialty resident training programs at our institution during a 4-year period. There was a surge in geriatric clinical consults among hospitalized patients, including 141 consults from 64 different providers in the first year, compared with a previous average of 10 sporadic geriatric consults yearly. Consult requests mirrored competencies and identified educational needs (BOX). Currently, 39 geriatrics summaries have been added to the Geriatrics Library repository since October 2006. Twelve summaries were used for the case-based presentations and were subsequently viewed through the electronic medical record portal a total of 193 times (4.29 views per month) and via the Geriatrics Library 182 times (4.04 views per month) between October 30, 2006, and June 30, 2010. Because of the individualized approach in developing the curriculum, a summative evaluation of the program, including comprehensive qualitative data analysis, was not performed.

Discussion

Acceptability

The increase in geriatric clinical consults, online viewing of topically related geriatric information summaries, positive subjective feedback received from residents, and program directors' requests for additional presentations validated our approach to enhance geriatric education by incorporating skilled information specialists into a case-based learning approach. Additional complex clinical questions were generated from discussions that arose during case presentations, and these literature summaries will be incorporated into the development of future case-based presentations.

Strengths and Limitations

A major strength of our approach for training residents in geriatric competencies is the provision of evidence-based literature summaries for geriatric topics mapped to competencies to enhance case-based presentations with just-in-time learning tailored to specialty needs. Additionally, the curricular needs assessment conducted after each presentation further informed the educator for the next presentation, targeting new competencies and revisiting complex aspects of those previously taught. A limitation of our approach is the use of surrogate markers as outcomes, including the change in the number of accesses to the Vanderbilt University Knowledge Management/Eskind Biomedical Library literature summaries, change in the number of subsequent geriatric consults, and subjective feedback, to measure the success of the curriculum.

Feasibility and Replication

The use of an electronic medical record messaging tool through which physicians can communicate their complex clinical questions to information specialists may be unique to the Vanderbilt setting. At the same time, the training and collaborative ventures between librarians as expert information specialists and medical educators to answer physicians' complex clinical questions during hospital rounds or via the Internet has been used in other settings.[15–18] Although a committed geriatric teaching faculty and receptive specialty training programs are

prerequisites, replication of our collaborative approach to delivering enhanced case-based presentations is feasible for geriatric faculty at other academic medical institutions with access to appropriately trained information specialists.

Conclusion

Case-based presentations enhanced with evidence-based summaries of research literature generated by information specialists is a feasible and effective approach to teaching clinical content targeting geriatric educational competencies to resident trainees in nongeriatric specialties. Presentations to nongeriatric residents are associated with an increase in clinical geriatric consults.

References

1 Hudson JN, Buckley P. An evaluation of case-based teaching: evidence for continuing benefit and realization of aims. *Adv Physiol Educ*. 2004; 28(1–4):15–22.
2 Rosenblum ND, Nagler J, Lovejoy FH Jr, Hafler JP. The pedagogic characteristics of a clinical conference for senior residents and faculty. *Arch Pediatr Adolesc Med*. 1995;149(9):1023–1028.
3 Srinivasan M, Wilkes M, Stevenson F, Nguyen T, Slavin S. Comparing problem-based learning with case-based learning: effects of a major curricular shift at two institutions. *Acad Med*. 2007;82(1):74–82.
4 Struck BD, Teasdale TA. Development and evaluation of a longitudinal case-based learning (CBL) experience for a geriatric medicine rotation. *Gerontol Geriatr Educ*. 2008;28(3):105–114.
5 Giuse NB, Kafantaris SR, Miller MD, Wilder KS, Martin SL, Sathe NA, et al. Clinical medical librarianship: the Vanderbilt experience. *Bull Med Libr Assoc*. 1998;86(3):412–416.
6 Giuse NB, Koonce TY, Jerome RN, Cahall M, Sathe N, Williams A. Evolution of a mature clinical informationist model. *J Am Med Inform Assoc*. 2005;12(3):249–255.
7 Giuse DA. Supporting communication in an integrated patient record system. *AMIA Annu Symp Proc*. 2003:1065.
8 Giuse NB, Jerome R, Koonce TY. Specialty-specific medical librarians provide quick access to evidence-based research, leading to reports of improvements in clinician decision making. AHRQ Health Care Innovations Exchange, August 18, 2008. http://www.innovations.ahrq.gov/content.aspx?id=2057. Accessed February 22, 2011.
9 Wenger NS, Shekelle PG. Measuring medical care provided to vulnerable elders: the assessing care of vulnerable elders-3 (ACOVE-3) quality indicators. *J Am Geriatr Soc*. 2007;55(suppl 2): S247–S487.
10 ACGME Competencies. http://www.acgme.org/acWebsite/RRC_140/140_prIndex.asp. Accessed February 22, 2011.
11 AAMC/John A. Hartford Foundation, Inc. Consensus Conference on Competencies in Geriatric Education (2007) AAMC Medical Student Competencies in Geriatric Medicine. Portal of Geriatric Online Education: http://www.pogoe.org. Accessed February 22, 2011.
12 Williams B, Warshaw G, Fabiny AR, Lundebjerg N, Medina-Walpole A, Sauvigne K, et al. Medicine in the 21st century: recommended essential geriatrics competencies for internal medicine and family medicine residents. *J Grad Med Educ*. 2010;2(3):373–383.
13 Giuse NB, Williams AM, Giuse DA. Integrating best evidence into patient care: a process facilitated by a seamless integration with informatics tools. *J Med Libr Assoc*. 2010;98(3):220–222.
14 Cahall M, Jerome R, Powers J. The impact of a literature consult service on geriatric clinical care and training in falls prevention. *J Med Libr Assoc*. 2008;96(2):88–100.
15 Cimpl K. Clinical medical librarianship: a review of the literature. *Bull Med Libr Assoc*. 1985;73(1):21–28.
16 Schwartz A, Millam G; UIC LCS Investigators. A web-based library consult service for evidence-based medicine: technical development. *BMC Med Inform Decis Mak*. 2006;6:16.
17 Detlefsen EG. The education of informationists, from the perspective of a library and information sciences educator. *J Med Libr Assoc*. 2002;90(1):59–67.
18 Scherrer CS, Dorsch JL. The evolving role of the librarian in evidence-based medicine. *Bull Med Libr Assoc*. 1999;87(3):322–328.